# Sequence listing:

SEQ ID NO: 1 shows a 7430 base pairs nucleotide sequence of an alternative dlg5 cDNA. Predicted start and stop codons are underlined. The first 328 nucleotides are derived from the novel 5' exon.

5 SEQ ID NO:2 shows the predicted DLG5 peptide sequence of 1919 amino acids SEQ ID NO: 3 shows the sequence of the novel 5' sequence identified for dlg5.

SEQ ID NO: 4 shows the proposed 5' sequence from EMBL entry AF352034.

SEQ ID NO: 5 shows the putative promoter sequence for dlg5.

10 SEQ ID NO: 189 shows the 7269 base pairs nucleotide sequence of N-terminally truncated dlg5 cDNA. Predicted start and stop codons are underlined. The first 166 nucleotides are derived from the novel 5' UTR exon.

SEQ ID NO: 190 shows the predicted N-terminally truncated DLG5 peptide 15 sequence of 1809 amino acids derived from SEQ ID NO: 189.

# SEQ ID NO:1

- CAGCAGAGCCTGGCCCAGGCCATGACGGAGGTGGAAGCCGTGCTCGGGCTGCTCGAGGCC 20 GCGGGAGCGCTCAGTCCCGGCGAGCGGCGGCAGCTGGACGAGGCGGGAGGCGCCCAAG GCGGAGCTGCTCAAGCTGCTCTTGGCCAAGGAGCGGGACCACTTCCAGGACCTGCGG GCGGCGCTGGAGAAGACGCAGCCTCACCTGCTGCCCATTCTCTACCTGAACGGCGTCGTC GGGCCGCCGCCGAAGGCGCGGGTTCTACCTACAGCGTCCTGTCCACCATGCCC TCAGACTCAGAAAGCAGCACCTCCCTCAGCAGTGTGGGCACTACCGGGAAGGCGCCGTCC 25 CCACCACCCTCCTCACTGACCAGCAAGTGAATGAGAAGGTGGAGAACCTCTCCATTCAG CTGCGGCTGATGACCCGGGAGAGAAACGAGCTCCGCAAGCGCCTGGCCTTTGCTACGCAT GGCACGGCCTTTGACAAGAGGCCCTACCACAGGCTGAATCCTGACTATGAGAGGCTGAAG ATCCAGTGCGTGCGAGCCATGTCGGACCTGCAGAGCCTGCAGAACCAGCACCAACGCC TTGAAGAGGTGTGAGGAGGTGGCCAAGGAGACTGACTTCTACCACACACTCCACAGCCGG 30 CTCCTGAGTGACCAGACTCGGCTGAAGGATGACGTGGACATGCTGAGGCGGGAGAATGGG  ${\tt CAGCTGCTGCGGGAGCGAAACCTGCTGCAGCAGTCATGGGAGGACATGAAGCGGCTCCAC}$ GAGGAGGACCAGAAGGAGATCGGTGACCTCCGTGCCCAGCAGCAGCAGGTGTTGAAGCAC AACGGGTCATCCGAGATTCTCAACAAACTGTATGACACGGCCATGGACAAGTTGGAGGTG GTCAAGAAGGACTATGACGCCCTTCGGAAGAGGTACAGTGAGAAAGTCGCCATCCACAAT 35 GCAGACCTGAGCCGCCTGGAGCAGCTGGGGGGGGAGAACCAGCGGTTGCTGAAGCAGACA GAGATGCTGACCCAGCAGAGGGGACACGGCCATCCAGCTGCAGCACCAGTGCGCCCTCTCC CTGAGGAGGTTTGAGGCGATCCACCATGAGCTGAACAAGGCCACGGCGCAGAACAAGGAC CTGCAGTGGGAGATGGAGCTGCAGTCAGAGCTGACCGAGCTGAGAACCACGCAGGTG AÁGACAGCAAAGGAGTCGGAGAAATACAGGGAGGAGCGGGACGCTGTACAGCGAGTAC 40 AAGCTCATCATGAGTGAGCGTGACCAGGTCATCTCTGAGCTGGACAAGCTGCAGACCGAA GTGGAGCTGGCCGAGTCCAAGCTCAAGAGCACATCTGAGAAGAAGCCGGCCAATGAG GAGATGGAGGCGCTGCGGCAGATCAAAGACACGGTGACAATGGATGCTGGGAGAGCCAAC CTCCAGGAGGCGGATGTGGCCAAGTGCCGGCGGACTGGGCCTTCCAGGAGCGAGACAAG 45 ATTGTAGCAGAGCGTGACAGCATCCGGACACTGTGTGACAACCTGAGGCGGGĀGCGGGĀC CGTGCGGTGAGCGAGCTGGCTGAGGCCCTGCGCAGCCTGGATGACACCCGCAAGCAGAAG AATGATGTCAGCCGCGAGCTGAAGGAGCTCAAGGAACAGATGGAATCCCAGTTGGAAAAG GAGGCCCGGTTCCGACAGCTGATGGCCCACAGCTCCCACGACTCGGCCATTGACACGGAT TCCATGGAGTGGGAAACGGAAGTTGTAGAGTTCGAGAGGGAGACGGAGGATATTGACTTG 50 AAGGCACTGGGGTTTGATATGGCAGAAGGTGTGAAŢGAGCCTTGTTTCCCGGGGGACTGT GGCATATTTGTCACTAAAGTGGACAAAGGAAGCATTGCTGATGGCCGCTTAAGGGTCAAT GACTGGCTGCTGAGAATCAACGATGTGGACCTCATCAACAAGGACAAGAAGCAGGCCATC AAGGCGCTCCTCAATGGGGAGGGGGCCATCAACATGGTCGTGCGGCGGAGGAAGTCCCTG GGTGGGAAGGTGGTCACGCCGCTGCACATCAACCTCAGTGGACAGAAAGACAGTGGCATC
- CTGAAGGTATTCCCTCAGAGCTCCTCGTGGAGTGGCCAGAACATTTTTGAAAATATCAAA GACTCTGATAAGATGCTGAGTTTTCGAGCCCATGGCCCGGAGGTCCAGGCTCATAACAAA 60 CGGAACTTGATACAGCACAATAACTCCACGCAGACAGCATCTTCTACACGGACAGGCTG

55 AGTCTGGAGAATGGAGTGTATGCTGCCGCTGTGCTGCCTGGAAGCCCTGCCGCTAAAGAA GGGTCCCTTGCTGTGGGAGACAGGATCGTTGCGATCAATGGCATTGCACTGGACAACAAG TCTCTGAATGAATGTGAATCTCTGCTGCGGAGCTGCCAGGACTCCCTGACCCTGTCCCTC

GAAGACAGGAAGGAGCCAGGCCCCCAGGAGGCAGCACCTCCTTTCTGCATAAGCCATTC CCTGGGGGACCCTTGCAGGTCTGCCCCCAGGCCTGTCCCAGTGCCTCTGAGCGTAGCCTG CGGCGGCCACTGCTGCCCTTTGAGACCGAGGTGGGCCCCTGTGGGGTTGGGGAGGCCTCC CTGGACAAGGCAGACTCTGAAGGCTCCAACAGCGGCGGGACCTGGCCCAAGGCCATGCTC ATCTTTGACCCTAACACTTTCAAACGCCCCCAGACACCCCCCAAAATAGACTACCTGCTT CCAGGTCCTGGGCCTGCTCACTCTCCCCAGCCCTCCAAGAGGGCGGGGCCTCTGACACCC CCAAAACCTCCCAGAAGGAGCGACTCCATTAAGTTCCAGCACAGGCTGGAGACTAGCTCC GAGTCAGAAGCCACTCTGGTGGGCAGCTCCCCATCCACTAGTCCCCCGAGCGCCCTGCCC CCTGACGTGGACCCCGGGGAGCCCATGCACGCATCACCCCCTCGCAAGGCCAGGGTCCGC ATTGCTTCCAGCTACTACCCTGAAGGAGATGGGGACTCCTCCCACCTGCCGGCCAAGAAA TCCTGTGATGAGGACCTCACCTCCCAGAAGGTGGATGAGCTGGGGGCAGAAGCGTCGCCGG CCAAAATCTGCTCCCAGTTTTCGGCCGAAGCTTGCTCCAGTAGTGATTCCTGCTCAGTTC CTGGAGGAACAGAAGTGTGTCCCGGCCAGTGGAGAACTCTCCCCGGAGCTCCAGGAGTGG GCACCTTACTCGCCTGGGCATTCCAGCCGGCACAGCAACCCCCGCTATACCCTAGCAGG CCGTCTGTGGGCACTGTTCCCCGGAGTTTGACCCCCAGCACCACTGTGAGCTCCATCCTG CGGAACCCCATCTACACTGTGCGCAGTCACAGGGTCGGCCCCTGCAGCTCTCCACCTGCG GCCCGAGATGCTGGCCCCCAGGGTTTGCATCCCAGTGTCCAGCACCAGGGACGCCTGAGC CTGGACCTGAGCCACAGGACCTGCAGCGACTACTCCGAGATGAGAGCCACCCATGGGTCC **AACTCACTGCCCTCCAGCGCCCGCCTGGGTTCTTCGAGTAACTTGCAGTTCAAGGCGGAA** CGCATTAAAATCCCATCAACACCAAGATATCCGCGGAGTGTCGTGGGCTCCGAGAGAGGT TCAGTGTCACATTCTGAATGCAGCACTCCTCCACAGTCACCCCTGAACATCGACACCCTG TCCTCTTGTAGCCAGTCCCAGACCTCAGCCTCCACATTGCCCAGAATCGCTGTCAACCCC GCGTCCCTCGGGGAGCGGAGAAAGGACAGGCCTTATGTGGAGGAGCCACGCCACGTGAAG GTGCAGAAGGGCTCAGAGCCGCTGGGCATCTCCATCGTGAGTGGAGAAAGGGCGGCATC TACGTCTCCAAGGTGACCGTGGGGAGCATCGCTCACCAGGCTGGCCTCGAGTATGGGGAT ATCATCGGGCAGCAGTGTGATACCATCACCATCCTGGCCCAGTACAACCCCCACGTGCAC CAGCTCAGCAGCCACTCCCGGTCCAGCTCACACCTGGACCCTGCCGGTACCCACTCCACT CTCCAGGGCAGTGGCACCACCCCGGAGCATCCATCTGTCATCGACCCACTGATGGAG GCCAACAGAAGACCCTGGAGCCACGCGTTGTCTTCATCAAAAAGTCCCAGCTGGAGCTT GGGGTGCACTTGTGTGGGGAACCTGCATGGGGTGTTTGTGGCCGAGGTGGAGGATGAC AGTCCTGCCAAGGGTCCTGACGGCCTCGTGCCAGGGGACCTCATCCTGGAGTATGGCAGC CTGGACGTGCGGAACAGACAGTGGAGGAAGTCTATGTGGAGATGCTGAAGCCCAGGGAT GGTGACAGCTTCTACATCAGGGCCCTGTACGACCGGCTGGCAGATGTGGAGCAAGAGTTG AGCTTTAAGAAGGACGACATCCTCTACGTGGATGACACCTTACCCCAGGGCACGTTCGGG  ${\tt TCCTGGATGGCTTGGCAGCTGGACGAGAATGCCCAGAAGATCCAGCGCGGGCAGATTCCC}$ AGCAAATATGTGATGGACCAAGAATTCTCCAGGAGGCTCAGCATGTCTGAAGTCAAAGAT GACAATAGCGCCACAAAGACGCTGTCAGCGGCTGCACGCCGGTCCTTTTTTCGGAGGAAA CACAAGCACAAACGCAGCGGGTCCAAGGACGGGAAAGACCTGCTCGCCTTGGATGCCTTT TCCAGTGACTCCATTCCACTCTTTGAAGATTCGGTGAGCCTGGCCTATCAGCGGGTCCAG AAGGTGGACTGCACCGCTCTGAGGCCTGTCCTGATTCTGGGGCCTTTGCTGGACGTGGTG AAGGAGATGCTGGTGAATGAGGCTCCTGGCAAGTTCTGCAGATGTCCCCTTGAGGTGATG AAGGCCTCCCAGCAGGCCATTGAGCGGGGTGTCAAAGATTGCCTGTTTGTCGACTATAAG CGGAGAAGCGGCCATTTCGATGTGACCACTGTGGCGTCAATAAAGGAGATCACAGAAAAG AACCGACACTGCCTCCTGGACATTGCTCCGCACGCTATTGAGCGGCTCCACCACATGCAC ATCTACCCCATTGTCATCTTCATCCACTACAAGAGCGCCAAGCACATCAAGGAGCAGAGA GACCCCATCTACCTGAGGGACAAGGTGACTCAGAGGCATTCCAAAGAGCAGTTTGAGGCG GCGCAGAAGCTTGAGCAGGAGTACAGCAGGTACTTCACAGGGGTCATCCAGGGAGGAGCC TGGATTCCAGCCTGCCCGCTC<u>TAG</u>GAGAATGCTGTGCTGTGGATGACTĠCAGCTGGCCGC CTGAGGGGACACCAGACTCAGCTTTTTCTAGCGACTGAAAGTAGAAGTCTGTCCGTCTA TGAACATGCGGGGGAAGGATCCGGAACCAGGACCCAGAAGCACCTCCTTTGTAGACAGAG GGCCACGGCTGCGTGCGATCCAGGCCCAGGCCCACACTCTGCCCGTGTCACACGTGTG TGATCAGAGATGCTGCAAAGAGAACCTTTCGGATCACTCGTTTACAAGCCTTTTCTAAGT TCTGTCAACCCCCTGTCGCTTTGGTGTTGGTTTCGTTCCCGTCTTCAGCAAAACGACCTT GGAACCTCAATGGGGGCTGCTTTGCTTTGGGAGGTTCTTGTTGGTGGGACCAGAGCTTTG ACAAACCTCCTGCTCCTTGGTGGCACCTCTCCTGGAAGGACGTCACAACTCCAGGTGCTC AGACTGCCTGTGGCAGCAGCACCAGTGCCTTTGGCATTTTCCTCCCACAATGGGGAAGGT GACTTTGGCATTCTTACAAACTCGTCTCTCGGCCTTTCTCTCCTGCCTTCCACAGCCTCT CGTTTCTCCTCCATCTGTGCTTATTACTTGAGGACTGTGTCTGCTCCGTGAGAGCTGCGT CTCCTTAGGCTCTGTAAGTCGTGACAGCCTTCATCAGTGCAATGTTTGCAGGGTAATTCT TAAACTTTTTAGAGGGTGGCAGGTACATCAGTTCTTTTTGATATGAAAACATTCATGTTT

# 15 SEQ ID NO:2

MEPQRRELLAQCQQSLAQAMTEVEAVLGLLEAAGALSPGERRQLDEEAGGAKAELLLKIL LAKERDHFQDLRAALEKTQPHLLPILYLNGVVGPPQPAEGAGSTYSVLSTMPSDSESSSS LSSVGTTGKAPSPPPLLTDQQVNEKVENLSIQLRLMTRERNELRKRLAFATHGTAFDKRP 20 YHRLNPDYERLKIQCVRAMSDLQSLQNQHTNALKRCEEVAKETDFYHTLHSRLLSDQTRL KDDVDMLRRENGQLLRERNLLQQSWEDMKRLHEEDQKEIGDLRAQQQQVLKHNGSSEILN KLYDTAMDKLEVVKKDYDALRKRYSEKVAIHNADLSRLEQLGEENQRLLKQTEMLTQQRD TAIQLQHQCALSLRRFEAIHHELNKATAONKDLOWEMELLOSELTELRTTOVKTAKESEK YREERDAVYSEYKLIMSERDQVISELDKLQTEVELAESKLKSSTSEKKAANEEMEALRQI 25 KDTVTMDAGRANKEVEILRKQCKALCQELKEALQEADVAKCRRDWAFQERDKIVAERDSI RTLCDNLRRERDRAVSELAEALRSLDDTRKQKNDVSRELKELKEQMESQLEKEARFRQLM AHSSHDSAIDTDSMEWETEVVEFERETEDIDLKALGFDMAEGVNEPCFPGDCGIFVTKVD KGSIADGRLRVNDWLLRINDVDLINKDKKQAIKALLNGEGAINMVVRRRKSLGGKVVTPL HINLSGOKDSGISLENGVYAAAVLPGSPAAKEGSLAVGDRIVAINGIALDNKSLNECESL 30 LRSCQDSLTLSLLKVFPQSSSWSGQNIFENIKDSDKMLSFRAHGPEVQAHNKRNLIQHNN STQTDIFYTDRLEDRKEPGPPGGSSSFLHKPFPGGPLQVCPQACPSASERSLSSFRSDAS GDRGFGLVDVRGRRPLLPFETEVGPCGVGEASLDKADSEGSNSGGTWPKAMLSSTAVPEK LSVYKKPKQRKSIFDPNTFKRPQTPPKIDYLLPGPGPAHSPQPSKRAGPLTPPKPPRRSD SIKFQHRLETSSESEATLVGSSPSTSPPSALPPDVDPGEPMHASPPRKARVRIASSYYPE 35 gdgdsshlpakkscdedltsqkvdelgqkrrppksapsfrpklapvvipaqfleeqkcvp ASGELSPELQEWAPYSPGHSSRHSNPPLYPSRPSVGTVPRSLTPSTTVSSILRNPIYTVR SHRVGPCSSPPAARDAGPQGLHPSVQHQGRLSLDLSHRTCSDYSEMRATHGSNSLPSSAR LGSSSNLQFKAERIKIPSTPRYPRSVVGSERGSVSHSECSTPPQSPLNIDTLSSCSQSQT SASTLPRIAVNPASLGERRKDRPYVEEPRHVKVQKGSEPLGISIVSGEKGGIYVSKVTVG SIAHQAGLEYGDQLLEFNGINLRSATEQQARLIIGQQCDTITILAQYNPHVHQLSSHSRS SSHLDPAGTHSTLQGSGTTTPEHPSVIDPLMEQDEGPSTPPAKQSSSRIAGDANKKTLEP RVVFIKKSOLELGVHLCGGNLHGVFVAEVEDDSPAKGPDGLVPGDLILEYGSLDVRNKTV EEVYVEMLKPRDGVRLKVQYRPEEFTKAKGLPGDSFYIRALYDRLADVEQELSFKKDDIL YVDDTLPQGTFGSWMAWQLDENAQKIQRGQIPSKYVMDQEFSRRLSMSEVKDDNSATKTL 45 SAAARRSFFRRKHKHKRSGSKDGKDLLALDAFSSDSIPLFEDSVSLAYQRVQKVDCTALR  ${\tt PVLILGPLLDVVKEMLVNEAPGKFCRCPLEVMKASQQAIERGVKDCLFVDYKRRSGHFDV}$ TTVASIKEITEKNRHCLLDIAPHAIERLHHMHIYPIVIFIHYKSAKHIKEQRDPIYLRDK

VTQRHSKEQFEAAQKLEQEYSRYFTGVIQGGALSSICTQILAMVNQEQNKVLWIPACPL

# 50 <u>SEO ID NO: 3</u>

GAGGCGGGAGGCGCCAAGGCGGAGCTGCTCCAAGCTGCTCTTTGGCCAAGGAGCGGGACCACTTCCAGGACCTG CGGGCGCGCTGGAGAAGACGCAGCCTCACCTGCTGCCCATTCTCTACCTGAACGGCGTCGTCGGGCCGCCGCAG CCCGCCGAAGGCGCGG

# 55 SEO ID NO: 4

### SEO ID NO: 5

#### SEO ID No:189

GAGGCGGGAGCCCCAAGGCGGAGCTGCTGCTCAAGCTGCTCTTGGCCAAGGAGCGGGACCACTTCCAGGACCTG 10 CCCGCCGAAGGCGCGGGTTCTACCTACAGCGTCCTGTCCACCATGCCCTCAGACTCAGAAAGCAGCAGCTCCCTC AGCAGTGTGGGCACTACCGGGÀAGGCGCCGTCCCCACCACCCCTCCTCACTGACCAGCAAGTGAATGAGAAGGTG GAGAACCTCTCCATTCAGCTGCGGCTGATGACCCCGGGAGAGAAACGAGCTCCGCAAGCGCCTTGCCTACG CATGGCACGGCCTTTGACAAGAGGCCCTACCACAGGCTGAATCCTGACTATGAGAGGCTGAAGATCCAGTGCGTG CGAGCCATGTCGGACCTGCAGAGCCTGCAGAACCAGCACCACCCTTGAAGAGGTGTGAGGAGGTGGCCAAG 15 GAGACTGACTTCTACCACACTCCACAGCCGGCTCCTGAGTGACCAGACTCGGCTGAAGGATGACGTGGACATG CTGAGGCGGGAGAATGGGCAGCTGCTGCGGGAGCGAAACCTGCTGCAGCAGTCATGGGAGGACATGAAGCGGCTC CACGAGGAGGACCAGAAGGAGATCGGTGACCTCCGTGCCCAGCAGCAGCAGGTGTTGAAGCACAACGGGTCATCC GAGATTCTCAACAAACTGTATGACACGGCCATGGACAAGTTGGAGGTGGTCAAGAAGGACTATGACGCCCTTCGG AAGAGGTACAGTGAGAAAGTCGCCATCCACAATGCAGACCTGAGCCGCCTGGAGCAGCTGGGGGAGGAGCAACCAG 20 CGGTTGCTGAAGCAGACAGAGATGCTGACCCAGCAGAGGGACACGGCCATCCAGCTGCAGCACCAGTGCGCCCTC TCCCTGAGGAGGTTTGAGGCGATCCACCATGAGCTGAACAAGGCCACGCGCAGAACAAGGACCTGCAGTGGGAG ATGGAGCTGCTGCAGTCAGAGCTGACCGAGCTGAGAACCACGCAGGTGAAGACAGCAAAGGAGTCGGAGAAATAC GACAAGCTGCAGACCGAAGTGGAGCTGGCCGAGTCCAAGCTCAAGAGCAGCACATCTGAGAAGAAGAAGCGGCCAAT 25 GAGGAGATGGAGGCGCTGCGGCAGATCAAAGACACGGTGACAATGGATGCTGGGAGAGCCAACAAGGAGGTTGAA CGGCGGGACTGGGCCTTCCAGGAGCGAGACAAGATTGTAGCAGAGCGTGACAGCATCCGGACACTGTGACAAC CTGAGGCGGGAGCGGGCGGGGGGGGGGGGGGGGGGCCTGCGCGGGGCCTGGGTGACACCCGCAAGCAG AAGAATGATGTCAGCCGCGAGCTGAAGGAGCTCAAGGAACAGATGGAATCCCAGTTGGAAAAGGAGGCCCGGTTC 30 CGACAGCTGATGGCCCACAGCTCCCACGACTCGGCCATTGACACGGATTCCATGGAGTGGGAAACGGAAGTTGTA GAGTTCGAGAGGGAGACGGATATTGACTTGAAGGCACTGGGGTTTGATATGGCAGAAGGTGTGAATGAGCCT TGTTTCCCGGGGGACTGTGGCATATTTGTCACTAAAGTGGACAAAGGAAGCATTGCTGATGGCCGCTTAAGGGTC AATGACTGGCTGCTGAGAATCAACGATGTGGACCTCATCAACAAGGACAAGAAGCAGGCCATCAAGGCGCTCCTC 35 ATCAACCTCAGTGGACAGAAGACAGTGGCATCAGTCTGGAGAATGGAGTGTATGCTGCCGCTGTGCTGCCTGGÂ AGCCCTGCCGCTAAAGAAGGGTCCCTTGCTGGGAGACAGGATCGTTGCGATCAATGGCATTGCACTGGACAAC AAGTCTCTGAATGAATCTCTGCTGCGGAGCTGCCAGGACTCCCTGACCTCTCCTGAAGGTATTC CCTCAGAGCTCCTCGTGGAGTGGCCAGAACATTTTTGAAAATATCAAAGACTCTGATAAGATGCTGAGTTTTCGA 40 TTCTACACGGACAGGCTGGAAGACAGGAAGGAGCCAGGCCCCCAGGAGGCAGCAGCTCCTTTCTGCATAAGCCA TTCCCTGGGGGACCCTTGCAGGTCTGCCCCCAGGCCTGTCCCAGTGCCTCTGAGCGTAGCCTGAGCTCCTTCCGC TCAGATGCCTCTGGGGACCGTGGCTTTGGGCTGGTGGACGTGGCCGGCGGCCACTGCTGCCCTTTGAGACC GAGGTGGGCCCCTGTGGGGTTGGGGAGGCCTCCCTGGACAGGCAGACTCTGAAGGCTCCAACAGCGGCGGGACC 45 TCCATCTTGACCCTAACACTTTCAAACGCCCCCAGACACCCCCCAAAATAGACTACCTGCTTCCAGGTCCTGGG CCTGCTCACTCTCCCCAGCCCTCCAAGAGGGCGGGCCTCTGACACCCCCAAAACCTCCCAGAAGGAGCGACTCC

ATTAAGTTCCAGCACAGGCTGGAGACTAGCTCCGAGTCAGAAGCCACTCTGGTGGGCAGCTCCCCATCCACTAGT CCCCGAGCGCCCTGCCCCTGACGTGGACCCCGGGGAGCCCATGCACGCATCACCCCCTCGCAAGGCCAGGGTC CGCATTGCTTCCAGCTACTACCCTGAAGGAGATGGGGACTCCTCCCACCTGCCGGCCAAGAAATCCTGTGATGAG GACCTCACCTCCCAGAAGGTGGATGAGCTGGGGCAGAAGCGTCGCCGGCCAAAATCTGCTCCCAGTTTTCGGCCG 5 AAGCTTGCTCCAGTAGTGATTCCTGCTCAGTTCCTGGAGGAACAGAAGTGTGTCCCGGCCAGTGGAGAACTCTCC CCGGAGCTCCAGGAGTGGGCACCTTACTCGCCTGGGCATTCCAGCCGGCACAGCAACCCCCGCTATACCCTAGC AGGCCGTCTGTGGGCACTGTTCCCCGGAGTTTGACCCCCAGCACCACTGTGAGCTCCATCCTGCGGAACCCCATC TACACTGTGCGCAGTCACAGGGTCGGCCCCTGCAGCTCTCCACCTGCGGCCCGAGATGCTGGCCCCCAGGGTTTG CATCCCAGTGTCCAGCACCAGGGACGCCTGAGCCTGGACCTGAGCCACAGGACCTGCAGCGACTACTCCGAGATG GAACGCATTAAAATCCCATCAACACCAAGATATCCGCGGAGTGTCGTGGGCTCCGAGAGAGGGTTCAGTGTCACAT TCTGAATGCAGCACTCCTCCACAGTCACCCCTGAACATCGACACCCTGTCCTTGTAGCCAGTCCCAGACCTCA GCCTCCACATTGCCCAGAATCGCTGTCAACCCCGCGTCCCTCGGGGAGCGGAGAAAGGACAGGCCTTATGTGGAG GAGCCACGCCACGTGAAGGTGCAGAAGGGCTCAGAGCCGCTGGGCATCTCCATCGTGAGTGGAGAGAAGGGCGGC 15 ATCTACGTCTCCAAGGTGACCGTGGGGAGCATCGCTCACCAGGCTGGCCTCGAGTATGGGGATCAGTTACTGGAG TTCAACGCCATAAACCTGCGGAGCGCCCACGGAGCAGCAGCGCGCTCATCATCGGGCAGCAGTGTGATACCATC ACCATCCTGGCCCAGTACAACCCCCACGTGCACCAGCTCAGCAGCCACTCCCGGTCCAGCTCACACCTGGACCCT GAGCAGGACGAGGGGCCTAGCACCCCCCCAGCCAAGCAGAGCAGCTCCAGGATTGCGGGAGATGCCAACAAGAAG 20 ACCCTGGAGCCACGCGTTGTCTTCATCAAAAAGTCCCAGCTGGAGCTTGGGGTGCACTTGTGTGGGGAACCTG CATGGGGTGTTTGTGGCCGAGGTGGAGGATGACAGTCCTGCCAAGGGTCCTGACGGCCTCGTGCCAGGGGACCTC ATCCTGGAGTATGGCAGCCTGGACGTGCGGAACAAGACAGTGGAGGAAGTCTATGTGGAGATGCTGAAGCCCAGG TACATCAGGGCCCTGTACGACCGGCTGGCAGATGTGGAGCAAGAGTTGAGCTTTAAGAAGGACGACATCCTCTAC 25 GTGGATGACACCTTACCCCAGGGCACGTTCGGGTCCTGGATGGCTTGGCAGCTGGACGAGAATGCCCAGAAGATC CAGCGCGGGCAGATTCCCAGCAAATATGTGATGGACCAAGAATTCTCCAGGAGGCTCAGCATGTCTGAAGTCAAA GATGACAATAGCGCCACAAAGACGCTGTCAGCGGCTGCACGCCGGTCCTTTTTTCGGAGGAAACACAAGCACAAA CCCAGCGGGTCCAAGGACGGGAAAGACCTGCTCGCCTTGGATGCCTTTTCCAGTGACTCCATTCCACTCTTTGAA GATTCGGTGAGCCTGGCCTATCAGCGGGTCCAGAAGGTGGACTGCACCGCTCTGAGGCCTGTCCTGATTCTGGGG 30 CCTTTGCTGGACGTGAAGGAGATGCTGGTGAATGAGGCTCCTGGCAAGTTCTGCAGATGTCCCCTTGAGGTG ATGAAGGCCTCCCAGCAGGCCATTGAGCGGGGTGTCAAAGATTGCCTGTTTGTCGACTATAAGCGGAGAAGCGGC CATTTCGATGTGACCACTGTGGCGTCAATAAAGGAGATCACAGAAAAGAACCGACACTGCCTCCTGGACATTGCT CCGCACGCTATTGAGCGGCTCCACCACATGCACATCTACCCCATTGTCATCTTCATCCACTACAAGAGCGCCAAG CACATCAAGGAGCAGAGAGACCCCATCTACCTGAGGGACAAGGTGACTCAGAGGCATTCCAAAGAGCAGTTTGAG 35 GCGGCGCAGAAGCTTGAGCAGGAGTACAGCAGGTACTTCACAGGGGTCATCCAGGGAGGAGCCCTGTCAAGCATT  ${\tt TGCACTCAGATCTTGGCAATGGTCAATCAAGAACAAAATAAAGTCCTGTGGATTCCAGCCTGCCCGCTC\underline{TAG}{\tt GAG}$ AATGCTGTGCTGTGGATGACTGCAGCTGGCCGCCTGAGGGGACACCAGACTCAGCTCTTTTCTAGCGACTGAAAG TAGAAGTCTGTCCGTCTATGAACATGCGGGGAAGGATCCGGAACCAGGACCCAGAAGCACCTCCTTTGTAGACA GAGGGCCACGGCTGCGTGCGATCCAGGCCCAGGCCCACACACTCTGCCCGTGTCACACGTGTGCTTTAACACAAA TTCGGATCACTCGTTTACAAGCCTTTTCTAAGTATTTGGTGGTTTATGTTTACTTGAACGGCTCCATGTTGCCGG TGCCCAGCCCTGTCCCCTCTGTCAACCCCCTGTCGCTTTGGTGTTTGGTTTCGTTCCCGTCTTCAGCAAAACGAC CTTGGAACCTCAATGGGGGCTGCTTTGCTTTGGGAGGTTCTTGTTGGTGGGACCAGAGCTTTGACAAACCTCCTG CTCCTTGGTGGCACCTCTCCTGGAAGGACGTCACAACTCCAGGTGCTCAGACTGCCTGTGGCAGCAGAACCAGTG 45 CCTTTGGCATTTTCCTCCCACAATGGGGAAGGTGACTTTGGCATTCTTACAAACTCGTCTCTCGGCCTTTCTCTC CTGCCTTCCACAGCCTCTCGTTTCTCCTCCATCTGTGCTTATTACTTGAGGACTGTGTCTGCTCCGTGAGAGCTG

# SEO ID NO: 190

15 mpsdsesssslssygttgkapsppplltdqqvnekvenlsiqlrlmtrernelrkrlafathgtafdkrpyhrln  ${\tt PDYERLKIQCVRAMSDLQSLQNQHTNALKRCEEVAKETDFYHTLHSRLLSDQTRLKDDVDMLRRENGQLLRERNL}$ LQQSWEDMKRLHEEDQKEIGDLRAQQQQVLKHNGSSEILNKLYDTAMDKLEVVKKDYDALRKRYSEKVAIHNADL SRLEQLGEENQRLLKQTEMLTQQRDTAIQLQHQCALSLRRFEAIHHELNKATAQNKDLQWEMELLQSELTELRTT QVKTAKESEKYREERDAVYSEYKLIMSERDQVISELDKLQTEVELAESKLKSSTSEKKAANEEMEALRQIKDTVT 20 MDAGRANKEVEILRKQCKALCQELKEALQEADVAKCRRDWAFQERDKIVAERDSIRTLCDNLRRERDRAVSELAE ALRSLDDTRKQKNDVSRELKELKEQMESQLEKEARFRQLMAHSSHDSAIDTDSMEWETEVVEFERETEDIDLKAL GFDMAEGVNEPCFPGDCGIFVTKVDKGSIADGRLRVNDWLLRINDVDLINKDKKQAIKALLNGEGAINMVVRRRK .  ${\tt SLGGKVVTPLHINLSGQKDSGISLENGVYAAAVLPGSPAAKEGSLAVGDRIVAINGIALDNKSLNECESLLRSCQ}$ DSLTLSLLKVFPQSSSWSGQNIFENIKDSDKMLSFRAHGPEVQAHNKRNLIQHNNSTQTDIFYTDRLEDRKEPGP 25 PGGSSSFLHKPFPGGPLQVCPQACPSASERSLSSFRSDASGDRGFGLVDVRGRRPLLPFETEVGPCGVGEASLDK ADSEGSNSGGTWPKAMLSSTAVPEKLSVYKKPKQRKSIFDPNTFKRPQTPPKIDYLLPGPGPAHSPQPSKRAGPL TPPKPPRRSDSIKFQHRLETSSESEATLVGSSPSTSPPSALPPDVDPGEPMHASPPRKARVRIASSYYPEGDGDS SHLPAKKSCDEDLTSQKVDELGQKRRRPKSAPSFRPKLAPVVIPAQFLEEQKCVPASGELSPELQEWAPYSPGHS SRHSNPPLYPSRPSVGTVPRSLTPSTTVSSILRNPIYTVRSHRVGPCSSPPAARDAGPQGLHPSVQHQGRLSLDL 30 SHRTCSDYSEMRATHGSNSLPSSARLGSSSNLQFKAERIKIPSTPRYPRSVVGSERGSVSHSECSTPPQSPLNID TLSSCSQSQTSASTLPRIAVNPASLGERRKDRPYVEEPRHVKVQKGSEPLGISIVSGEKGGIYVSKVTVGSIAHQ AGLEYGDQLLEFNGINLRSATEQQARLIIGQQCDTITILAQYNPHVHQLSSHSRSSSHLDPAGTHSTLQGSGTTT PEHPSVIDPLMEQDEGPSTPPAKQSSSRIAGDANKKTLEPRVVFIKKSQLELGVHLCGGNLHGVFVAEVEDDSPA KGPDGLVPGDLILEYGSLDVRNKTVEEVYVEMLKPRDGVRLKVQYRPEEFTKAKGLPGDSFYIRALYDRLADVEQ 35 ELSFKKDDILYVDDTLPQGTFGSWMAWQLDENAQKIQRGQIPSKYVMDQEFSRRLSMSEVKDDNSATKTLSAAAR RSFFRRKHKHKRSGSKDGKDLLALDAFSSDSIPLFEDSVSLAYQRVQKVDCTALRPVLILGPLLDVVKEMLVNEA PGKFCRCPLEVMKASQQAIERGVKDCLFVDYKRRSGHFDVTTVASIKEITEKNRHCLLDIAPHAIERLHHMHIYP IVIFIHYKSAKHIKEQRDPIYLRDKVTQRHSKEQFEAAQKLEQEYSRYFTGVIQGGALSSICTQILAMVNQEQNK VLWIPACPL